CLAIMS

1. A multiplexed high voltage DC-AC driver, comprising:

a plurality of DC-AC switches, each receiving an input DC voltage, and each operative, when enabled, to toggle its output at a rate based on a master clock signal and at a voltage based on said input DC voltage;

said plurality of DC-AC switches including at least one high side switch and a low side switch;

said low side switch including a clock inverter and operating out-of-phase relative to each enabled high side switch; and

decoder logic that enables selected ones of said at least one high side switch and that enables said low side switch when any high side switch is enabled.

2. The multiplexed high voltage DC-AC driver of claim 1, further comprising a boost switching converter driver that converts a low voltage DC signal into said input DC voltage having a higher voltage level.

3. The multiplexed high voltage DC-AC driver of claim 1, wherein each of said plurality of DC-AC switches comprises a half-bridge switch.

4. The multiplexed high voltage DC-AC driver of claim 1, wherein each of said plurality of DC-AC switches comprises:

first and second switches having a current path coupled between said input DC voltage and ground, having an intermediate output node and having first and second control inputs; and

a driver circuit that alternates activation of said first and second switches based on said master clock signal.

5. The multiplexed high voltage DC-AC driver of claim 4, wherein:

said driver circuit comprises:

a level shifter driver having an input receiving a corresponding one of a plurality of enable clock signals and an output coupled to said first control input; and

an inverter/driver having an input receiving said corresponding enable clock signal and an output coupled to said second control input; and

wherein said decoder logic provides selected ones of said plurality of enable clock signals, which are based on said master clock signal.

6. The multiplexed high voltage DC-AC driver of claim 5, further comprising a charge pump having an input receiving said input DC voltage and an output that provides a boost voltage signal to said level shifter driver.

7. The multiplexed high voltage DC-AC driver of claim 4, wherein said first and second switches each comprise a field-effect transistor (FET).

8. The multiplexed high voltage DC-AC driver of claim 4, further comprising a diode coupled in series between said input DC voltage and said current path of said first and second switches.

9. The multiplexed high voltage DC-AC driver of claim 1, wherein said decoder logic comprises:

a plurality of gates, each having a first input receiving said master clock signal, a second input receiving a corresponding one of a plurality of enable signals, and an output providing a corresponding one of a plurality of enable clock signals; and

a decoder that provides said plurality of enable signals.

10. The multiplexed high voltage DC-AC driver of claim 9, wherein each of said plurality of gates comprises a NAND gate.

11. The multiplexed high voltage DC-AC driver of claim 9, wherein said decoder comprises a serial peripheral interface.

12. A multiplexed DC-AC converter, comprising:

a boost DC-DC converter that boosts a first DC voltage to a second DC voltage having a higher voltage level; and

a DC-AC multiplexer, coupled to said boost DC-DC converter, comprising:

a plurality of DC-AC switches, each converting, when selected, said second DC voltage to a corresponding one of a plurality of AC output voltages in which each AC output voltage is switched between first and second DC voltage levels based on said second DC voltage at a rate based on a common clock signal;

said plurality of DC-AC switches including at least one high side switch and a low side switch that operates out-of-phase relative to each high side switch; and

select logic that selects among said at least one high side switch and that selects said low side switch when any high side switch is selected.

13. The multiplexed DC-AC converter of claim 12, wherein said second DC voltage level is approximately 350 volts.

14. The multiplexed DC-AC converter of claim 12, wherein each AC output voltage is switched, when selected between approximately zero volts and approximately 350 volts.

15. The multiplexed DC-AC converter of claim 12, further comprising a load coupled between an AC output voltage of a high side switch and an AC output voltage of said low side switch.

16. The multiplexed DC-AC converter of claim 15, wherein said load comprises an electroluminescent lamp.

17. The multiplexed DC-AC converter of claim 12, wherein each of said plurality of DC-AC switches comprises:

a first switch having a current path coupled between said second DC voltage and a corresponding AC output voltage and having a first control input;

a second switch having a current path coupled between said corresponding AC output voltage and ground and having a second control input;

a level shifter driver having an input receiving a corresponding one of a plurality of enable clock signals and an output coupled to said first control input; and

an inverter/driver having an input receiving said corresponding enable clock signal and an output coupled to said second control input;

wherein said low side switch further includes a clock inverter that inverts a corresponding one of said plurality of enable clock signals.

18. The multiplexed DC-AC converter of claim 17, wherein said select logic comprises:

enable logic that provides a corresponding one of said plurality of enable clock signals based on said common clock signal when a corresponding one of a plurality of enable signals is provided; and

a decoder that provides said plurality of enable signals to select among said high side switches and to select said low side switch when any of said high side switches are selected.

19. A method of converting a DC voltage to a plurality of multiplexed AC voltages, comprising:

converting a low voltage DC signal to a high voltage DC signal;

selecting from among a plurality of outputs;

enabling a corresponding one of a plurality of first DC-AC converters for each selected output;

switching, by each enabled first DC-AC converter, a corresponding one of the plurality of outputs between the high voltage DC signal and ground;

enabling a second DC-AC converter when any of the first DC-AC converters are enabled;

switching, by the second DC-AC converter when enabled, a common output between the high voltage DC signal and ground; and

switching the second DC-AC converter out-of-phase relative to each first DC-AC converter.

20. The method of claim 19, wherein said switching a corresponding one of said plurality of outputs and said switching a common output each comprises:

alternating activating between first and second switches;

the first switch, when activated, coupling a corresponding output to the high voltage DC signal; and

the second switch, when activated, coupling the corresponding output to ground.